A Head Start on Cornell Undergraduate Research

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CONTACT: Linda McCandless, llm3@cornell.edu, 315-787-2417

by Peter Seem

GENEVA, NY: A member of the Cornell Class of 2004 has been conducting research with help from a Cornell University entomologist since she was a sophomore in high school. Emily Posner, of Suffern High School, joined a three-year program sponsored by the National Science Foundation and SUNY Albany to conduct applied research in 1997. Her paper, "Effects of Pheromone Trap Height and Design in Monitoring the European Corn Borer Moth *(Ostrinia nubilalis),*" earned her a semi-finalist position and $1,000 in Intel's Science Talent Search. She was also selected as a finalist speaker to present her research at the NYS Science & Humanities Symposium last April.

Suggested caption: Emily Posner (right), Cornell University '04, conducted research on pheromone trap height to monitor for European corn borers with Charlie Linn (left) of the New York State Agricultural Experiment Station while she was a sophomore at Suffern High School. Posner, a member of Cornell's incoming freshman class in the College of Agriculture and Life Sciences and a Presidential Research Scholar, was a semi-finalist in Intel's Science Search for the paper she wrote regarding the research. CREDIT: L. McCandless/NYSAES/Cornell

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"I've worked with graduate students and undergraduates in the past, but never with a high school student before," said Charles Linn, the research associate at Cornell's New York State Agricultural Experiment Station, in Geneva, who acted as her mentor.

"I'd learned the scientific method in class, but never really lived it," said Posner, who is now keeping some of the European corn borer moths from that research in her freshman dorm at Cornell.

During her preliminary research on her chosen topic, pheromones - airborne chemicals used by many insects to communicate - Posner said the search engines kept bringing her to Cornell University's entomology web site. Eventually she sent an e-mail to Professor Wendell Roelofs that he passed on to Linn, asking several questions about the European

corn borer moth and the relationship between pheromone trap placement and effectiveness.

After several more letters, it became clear to Linn that Posner wanted to conduct her own field test. "From the very start I was very uncertain whether this was a good idea, because of the distance [*between Geneva and Suffern*], and also because of the inherent difficulties of a field project, which are the weather, whether or not there are insects out there… I could see a hundred things that could go wrong," he said.

After meeting for the first time at a Cornell Orientation day, Linn agreed to "mentor from a distance," and Posner's work began. She spoke with farmers, found a field to use for tests, and set up the site. Linn secured a donation of pheromone traps from the Trécé Corporation, in California. Posner built stands and designed a pattern for trap placement designed to test the hypothesis that effective trap placement is at or in the grass, because the moths live in the grass. Posner set up traps at three heights, with three replications of each height for each of two strains of the moth.

In May, 1999, Linn made the trip down to Suffern. "By that time Emily had overcome all of the hurdles I had placed before her and had committed enough time and energy that I felt it was worthwhile to make the trip to make sure the site really would work. And it was an excellent site, which became even better when the traps actually captured some moths," said Linn. From May 18 until July 6, Posner visited the site every two to three days to check the traps and collect data.

By her senior year, she began to write the scientific paper that eventually carried her the semi-finalist accolades.

Posner made a discovery during the course of her research that is of particular interest to the Trécé Corporation. Posner found that the company's lures did not last as long in the field as they were expected to, and confirmed this with a small test of her own design. Partly as a result of her findings, Trécé is conducting its own tests to verify the field life of its product.

It was partly due to her research project with Linn that Posner decided to apply to Cornell. "Even though I was a high school student, Dr. Linn was willing to help me. He set an example for the opportunities I could have at Cornell, with his enthusiasm and willingness to teach," Posner said.

Posner was accepted into the College of Agriculture and Life Sciences as a Presidential Research Scholar, and awarded $10,000 over four years with which to conduct research in cooperation with a faculty mentor. "I hope to do research with genetically modified organisms and biotechnology at Cornell," said the college freshman. Posner expects to major in Communications.

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